

CLAIMS:

1. (Currently amended) A detection device for detecting irregular intravascular pressure in proximity of a suspected location of irregular blood flow, said device comprising: analyzing means operatively connected to an extracorporeal blood flow circuit for automatically analyzing extracorporeal blood pressure to derive intravascular pressure upstream of a suspected location of irregular blood flow and comparing the intravascular blood pressure to a standard, ~~whereby~~ and detecting means for detecting and comparing variations in the intravascular blood pressure during multiple tests is indicative of to indicate irregular blood flow.

2. (Currently amended) The device according to claim 1, wherein said analyzing means ~~is computer-driven~~ includes a microprocessor.

3. (Currently amended) The device according to claim ~~2~~ 4, wherein said analyzing means ~~is an equation~~ microprocessor includes computing means for computing an algorithm, said algorithm including estimating means for estimating intravascular pressure inside a blood access site to detect potential stenotic lesions in the blood access site due to elevations in intravascular pressure.

4. (Canceled).

5. (Currently amended) The device according to claim ~~3~~ 4, wherein said algorithm calculates the ratio between intravascular venous blood pressure and mean arterial pressure of the patient.

6. (Currently amended) The device according to claim 1, wherein said detecting means is further defined as detecting and comparing variations in the

intravascular blood pressure during multiple tests to detect irregular blood flow for use in, said irregular blood flow indicating a risk selected from the group consisting of potential access failure, stroke, heart attack, and stenosis.

7-9. (Canceled).

10. (Currently amended) A method of detecting potentially compromised or irregular blood flow by:

calculating intravascular blood pressure in proximity upstream of a suspected location of irregular blood flow from a measurement of extracorporeal blood pressure; and

comparing the calculated intravascular blood pressure to a standard; and
detecting restricted blood flow when whereby elevation of the calculated intravascular blood pressure over a series of calculations is indicated. ~~indicates a restricted blood flow.~~

11 (Currently amended) The method of claim 10, wherein said calculating step further includes automatically calculating intravascular blood pressure.

12. (Currently amended) The method of claim 10, wherein said comparing step further includes automatically comparing the calculated intravascular blood pressure to a standard.

13. (Currently amended) The method of claim 12, wherein said automatically comparing step further includes automatically comparing the calculated intravascular blood pressure to a standard using an algorithm.

14. (Currently amended) The method of claim 10, wherein said calculating step further includes automatically calculating intravascular blood pressure during a procedure.

15. (Currently amended) A system for providing warning of potential health problems due to irregular intravascular pressure, said system comprising: a detection device according to claim 1; and communication means operably connected to said device for communicating a warning when said device indicates an irregularity of intravascular blood pressure when compared to a standard with of at least two uses of said device.

16. (Original) The system according to claim 15, wherein said communication means is selected from the group consisting essentially of electronic communications, facsimile, telephone, cable modem, and T1 connection.

17. (Currently amended) An algorithm on an integrated circuit for detecting irregular intravascular pressure in proximity to an access site for an extracorporeal circuit, including the steps of:

calculating intravascular blood pressure in proximity of a suspected location of reduced blood flow from a measurement of extracorporeal blood pressure;

comparing the calculated intravascular blood pressure to a standard;

repeating the calculating and comparing steps for multiple tests;

determining that an elevation of the calculated intravascular blood pressure over the multiple tests is indicative of restricted blood flow near the access site.

18-21. (Canceled).

22. (Currently amended) An alarm system for use with the algorithm of set ~~for in~~ claim 17 for use in any fluid transporting device or fluid transporting system, said alarm system comprising an integrated circuit for performing the algorithm of claim 17 ~~alarm~~, wherein said algorithm further includes the steps of determining ~~determines~~ an alarm level based on the rate of fluid flow through a device that is part of the alarm system and physical properties of fluid transported through the device; and setting off an alarm based on said determined alarm level. ~~and an alarm is set off based on said algorithm.~~

23. (Original) The alarm system according to claim 22, wherein said alarm level can be set at any value that insures safe operation of the device.

24-25. (Canceled).